

History and Existing Conditions

The following description excerpts are from the Tulsa District website:

http://www.swt.usace.army.mil/recreat/ViewHistoryMessage.cfm?tblMessages_LakeName=John%20Redmond%20Reservoir.

The John Redmond project was authorized as "Strawn Dam." The town of Strawn was relocated 6 miles eastward on higher ground when the dam was constructed. The old town site is now under water.

In 1958, Congress renamed it John Redmond Dam and Reservoir for the Burlington Daily Republican's publisher, John Redmond, a beloved figure in Kansas newspaperdom who had received his training under the great William Allen White of the Emporia Gazette. One of the first to champion the causes of flood control and water conservation along the Neosho River, Mr. Redmond's work along these lines continued from the early 1920's until his death in 1953 at the age of 79. His dream of controlling floods in the upper Neosho had started to become a reality with authorization of the four dams in 1950.



The fertile Neosho Valley was flooded 57 times in 34 years, with the worst flood coming in 1951, one year after Congress authorized the project. Floodwaters ran 30 feet deep at the dam site and one-third million acres were under water.

John Redmond Dam was pressed into flood control operation several weeks before final completion, protecting the Neosho River Valley for the first time from damaging floods.

Designed and built by the U. S. Army Corps of Engineers, Tulsa District at a cost of \$29,264,000, the project was started in 1959 and placed in flood control operation in 1964. The John Redmond project was authorized by Congress under the Flood Control Act of 1950.

The following description excerpts are from the Tulsa District website:

http://www.swt.usace.army.mil/recreat/OPSField.CFM?tblOPSField_LakeName=John%20Redmond%20Reservoir.

John Redmond Dam is located on the Neosho River about 3 miles north and 1 mile west of Burlington, Kansas, just off U. S. Highway 75. John Redmond Reservoir is located in the broad Neosho River Valley. The rolling hills afford the visitor an opportunity to see many acres of agriculture and grassland. Fields of wheat, corn, and maize are abundant. Large areas of grasses including big bluestem, little bluestem, Indian grass, switch grass, brome grass, and sideoats grama can be seen from the rolling hilltops. The lower areas consist of

wooded cover of such species as elm, black walnut, hickory, ash, hackberry, cottonwood, and cedar.

The Kansas Department of Wildlife and Parks has a license to 1,472 acres of the project lands for wildlife management near the John Redmond Dam. The licensed area is known as the Otter Creek Game Management Area and is managed primarily for bobwhite quail, mourning dove, greater prairie chicken, cottontail rabbit, squirrel, and deer.

John Redmond Reservoir has recreation parks that provide camping and picnicking facilities. These facilities include individual camping units (table, cooker, lantern stand, and parking pad), potable water, and sanitation facilities. Also provided are group shelters, toilet facilities, swimming beaches, and boating launching ramps.

The following Reservoir description excerpts and discussion of the logjam are from the draft SUPPLEMENT TO THE FINAL ENVIRONMENTAL IMPACT STATEMENT [SFEIS], Prepared For: Reallocation of Water Supply Storage Project: John Redmond Lake, Kansas, U.S. Army Corps of Engineers; Tulsa District. [Literature and figure references contained in these excerpts may be found in the SFEIS. The excerpts are referenced by page number from the draft SFEIS. The contents of the final SFEIS are subject to change before a final report is filed. Highlighting is used to point out logjam text from the report.]

[ES-1] Water storage began during September 1964, collecting drainage from an approximately 3,015-square mile drainage basin. John Redmond Dam lies below Marion Dam, constructed on the Cottonwood River (a tributary to the Neosho River), and Council Grove Dam, also constructed on the Neosho River, and is the integral component of this flood control system. Uncontrolled drainage to the John Redmond Dam includes approximately 2,569-square miles below the upper two dams. Below John Redmond Dam to the Grand Lake O' the Cherokees in Oklahoma, an additional 7,238 square miles of uncontrolled drainage releases water to the Neosho River.

[ES-1] John Redmond Reservoir contains three types of water storage that are separated by zones from the top to the bottom of the lake: flood control pool, conservation pool, and inactive storage. The upper zone provides 534,417 acre-feet of flood control storage and is reserved to contain floodwaters; it otherwise remains empty and is managed for agriculture, wildlife habitat, and recreation under the Otter Creek State Wildlife Area, Flint Hills National Wildlife Refuge, and USACE authorities. The conservation pool provides 50,501 acre-feet of storage for water supply, water quality, and space to contain sediment. The pools, dam structure, agricultural land, wildlife habitat, and recreation sites are contained within approximately 29,798 acres.

[1-7] Two public scoping meetings were held in conjunction with the notice of intent. The first meeting was held on 29 March 2001, in Burlington, Kansas, and the second meeting was held on 5 April 2001, in Chetopa, Kansas. In addition to these public scoping meetings, another meeting was held with the Neosho Basin Advisory Committee on 16 March 2000. The purpose of these meetings was to inform the public of the upcoming water supply reallocation study and to allow citizens an opportunity to comment on the

proposed 2-foot raise in the conservation pool water level at John Redmond Lake. An advertisement for the scoping meetings was placed in the Coffey County Republican newspaper on 14 March 2001. Press releases were sent to 47 newspapers and radio and television stations for publication or announcement (Appendix A). Copies of the presentation and handout materials are also included in Appendix A.

[1-8] Burlington, Kansas. Thirty individuals representing the public, county agencies, and State agencies attended the scoping meeting held in Burlington, Kansas. Only two written comments were received at the meeting, but attendees could also obtain comment forms to fill out later and return by mail. The following is a synopsis of the concerns expressed by attendees of the Burlington, Kansas, meeting:

- *Remove the logjam at Jacobs Creek.*
- *Cut a channel around the logjam.*
- *Logjam creates a higher pool in the upper reaches of the lake.*
- *Removal of the logjam would permit water to enter the conservation pool.*
- *Include seasonal pool management plan in the reallocation study.*
- *Keep riffles at Hartford clean for madtom habitat.*
- *Concern for flooding Neosho madtom habitat.*
- *Operations Division should clean out logjam, as done in early years.*
- *Logjam is causing increased flooding of USACE property upstream of John Redmond Lake, around flood pool lands, and upstream to Emporia, Kansas.*
- *Determine if the increased conservation pool limits Kansas Department of Wildlife and Parks (KDWP) seasonal pool manipulation plans.*
- *Raising the conservation pool will adversely impact the KDWP OCWA management area (1,600 acres) and make it flood more frequently.*
- *More damage to crops due to increased flooding because of conservation pool raise.*
- *Animals are being forced out of their habitat because of higher water levels (i.e., increasing crop damage and increasing car/deer accidents).*
- *Stream bank caving caused from the way the USACE operates John Redmond Lake, losing cushion of extra flood control storage.*
- *Should build detention ponds above John Redmond Lake to trap sediment as was promised before John Redmond Lake was built.*
- *Build Cedar Point Lake like the USACE was supposed to.*
- *Increase in conservation pool will increase the duration and frequency of flooding on easement lands.*
- *K-130 bridge increases backwater effects.*
- *High pools isolate non-easement lands preventing farmers from harvesting crops.*

[1-8] The USACE has also received a petition (2001, specific date unknown) signed by 101 individuals from Jacobs Creek, Burlington, Emporia, Hartford, and Neosho Rapids, Kansas. The petition requests the removal of a logjam 0.9 mile east of the Jacobs Creek (Strawn) boat ramp. The petitioners state that the logjam is causing road and property flooding (Appendix A).

[3-10] Near the upper end of the reservoir, north of Jacobs Creek Landing, an inflow debris field, dubbed locally as the logjam, has formed in the channel of the Neosho River at a point where the river flow is divided into two channels around an island. River flows slow sufficiently in this reach to allow floating driftwood carried from upstream to be captured by other driftwood and debris already deposited in this 3/8-mile-long site. This logjam is an impediment to boaters desiring access from the reservoir directly up the river to other launching facilities. Under certain conditions it may also represent an impediment to fish movement between the river and the reservoir.

[3-21] For the Neosho River, removal of the logjam would result in a large quantity of sediment residing there to be exported or transported into the conservation pool of John Redmond Lake, further affecting water supply storage. A thorough analysis of this river reach would be warranted to determine sediment quantity and possible fate prior to logjam removal attempts.

[3-26] A drift logjam up to 3/8 mile in length [updated in later discussion in this IA] occurs in the Neosho River near the Jacobs Landing site. The logjam has formed above an island in the Neosho River, which causes the river to fork into two channels (Figure 3-4). This logjam has attracted local attention in favor of removal, and was the topic of comments obtained during public meetings held in Burlington, Kansas. Although the logjam does not contribute to downriver flooding, it is quite large and was considered cost prohibitive to remove (FHNWR 2000).

[3-26] Local citizens attempted removal of the logjam by burning during the summer of 1999, but the wet wood would not carry the fire (FHNWR 2000). The accumulated debris at the site is considered economically unfeasible to remove by demolition or mechanical means. The Neosho River may eventually form a new channel around this location, south of the existing channel (Jirak, personal communication, 2001).

[3-27] Some effects of the logjam or large woody debris accumulation in the Neosho River north of Jacobs Creek Landing and west of the reservoir have been identified and include:

- an impediment to navigation by boat between the lake and upriver sites
- slowing or dissipation of Neosho River flows resulting in some backwater formation
- diversion of water over the access road to the Jacobs Creek Landing boat ramp during high flow events for the Neosho River
- aggradation (raising) of the riverbed due to accumulation of sediment; the sediments also serve to anchor the logjam into the riverbed
- dropping of sediments within the John Redmond flood control pool rather than the conservation pool
- formation of a structure resistant to erosion, much like a geologic feature might be
- future island formation or formation of a cut-off oxbow when sediment deposition is sufficient

- a source for driftwood to accumulate and possibly float into the reservoir and against the dam structure during flood events

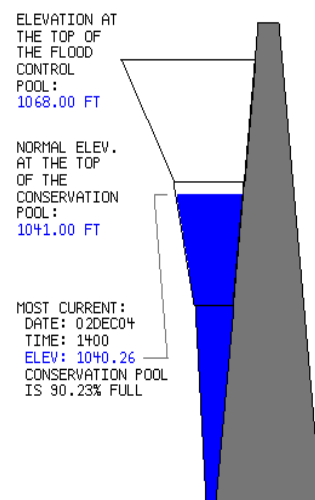
[3-27] In addition to the observed effects listed above, the following research would benefit any potential logjam removal analysis:

- (1) determination of other, similar examples of large woody debris accumulation for other reaches of the Neosho River and the effect,
- (2) study of the effects of raising the reservoir water level to 1041.0 feet on debris accumulation and navigation at the logjam site,
- (3) economic analysis of logjam removal, hauling, storage, and disposal versus other alternatives, such as opening a new, more direct channel into the reservoir, and
- (4) examination of different forms of large woody debris management, including upriver prevention measures.

The lake storage graphic and table are from the Tulsa District website:

<http://www.swt-wc.usace.army.mil/JOHN.lakepage.html>

	Elevation (feet)	Incremental Storage		Cumulative Storage	
		(inches)	(acre-feet)	(inches)	(acre-feet)
Surcharge Pool	----	----	----	----	----
Flood Control Pool	1068.00	3.45	555,472	3.88	623,136
Conservation Pool	*1041.00	0.42	67,626	0.42	67,664
Inactive Pool	1020.00	0.00	38	0.00	38



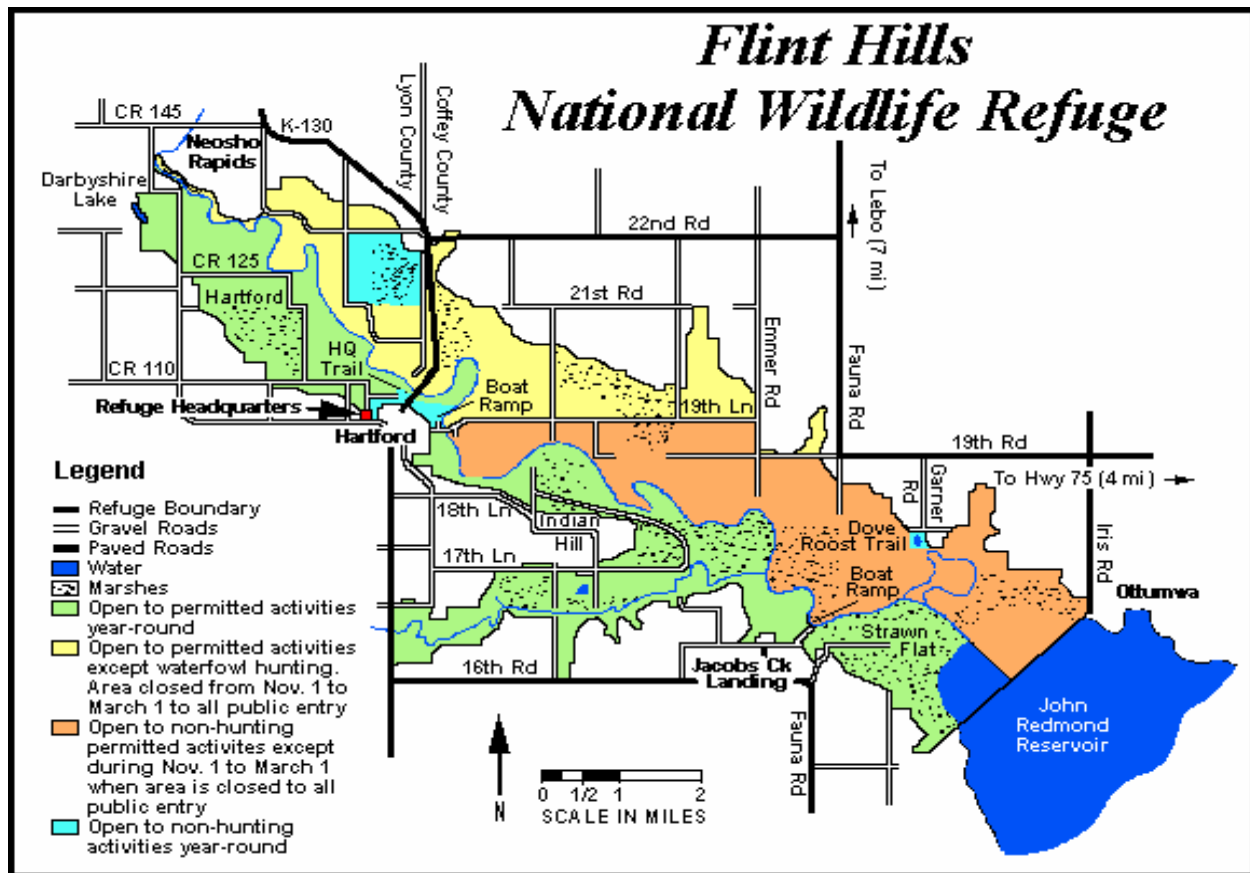
* Reflects the proposed 2nd two-foot storage reallocation from flood control to water supply storage which also matches the seasonal conservation pool level on this date.

The following description excerpts and graphics are from the Flint Hills National Wildlife Refuge website: <http://flinthills.fws.gov/>

Flint Hills National Wildlife Refuge is one of a system of over 500 refuges administered by the U. S. Fish and Wildlife Service and dedicated to the preservation and conservation of wildlife. Named for the Flint Hills Region just to the west, the refuge consists of 18,500 acres located on the upstream portion of John Redmond Reservoir on land owned by the U. S. Army Corps of Engineers.

Established in 1966, the refuge is managed primarily for migratory waterfowl. Intensive use by ducks and geese occurs during the spring and fall migration. Farmlands are managed on a share basis with area farmers with the refuge share providing food for migrating waterfowl and resident wildlife. Numerous ponds and a system of shallow marshes provide additional waterfowl habitat. Waterfowl and bald eagle management

requires that portions of the refuge be closed and that public access during periods of intensive waterfowl use be restricted.



Since the logjam upstream of the Reservoir was described in 2002, a significant accumulation of debris occurred in the spring of 2004. The total length of the logjam is currently estimated at over 1.5 miles in length. The large accumulation of woody debris is generally attributed to three factors: (1) the existence of a smaller logjam since about 1991 (the plug); (2) an ice storm that severely damaged trees in southeastern Kansas in 2002, including a portion of the upper Neosho River Basin, and (3) a wetter than normal spring in 2004 with corresponding higher and longer than normal river flows that carried debris into the Neosho River.

Residents and local government interests have indicated that large amounts of woody debris are still present along the Neosho River and tributary streams and that if a wetter than usual spring in 2005 or a large flood event occurs, a similar or larger “growth” of the logjam may be experienced. Corps field assessments in December 2004 support local findings of large amounts of deadfall near river and stream courses. This relative comparison is made to the Walnut River Basin to the west and the Arkansas River main stem in Oklahoma.

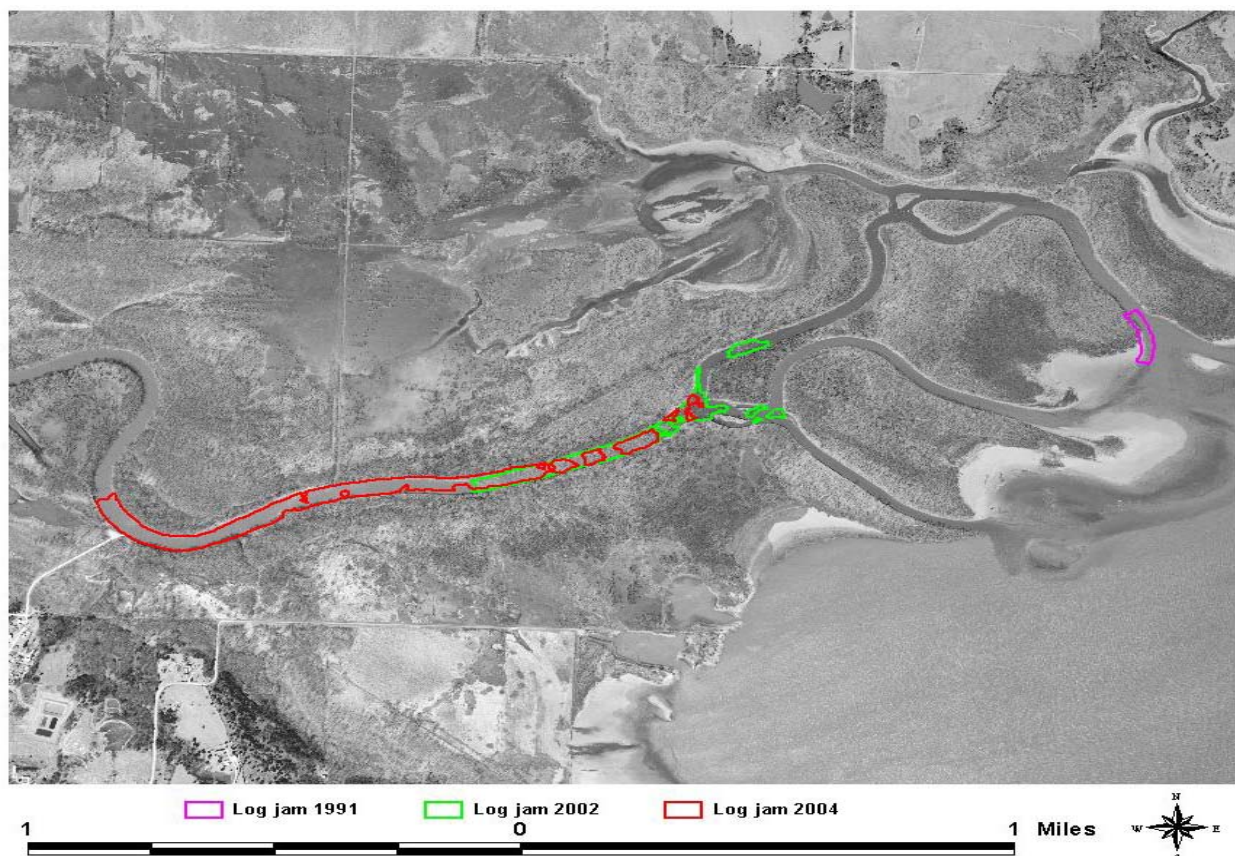
Ice storms are not uncommon in the Midwest and could result in periodic increases in the amount of deadfall along watercourses upstream of the current logjam in the River. Ice storm contributions to debris would be in addition to trees and limbs that otherwise may enter the

watercourse through erosion of live trees, natural life cycle processes, or human actions. The Reservoir area experienced an ice storm in January 2005 that damaged trees.

The Federal Emergency Management Agency's announcement of the 2002 ice storm and a map of disaster-designated counties are attached (Enclosure 1). A second map is shown with the Neosho River Basin outline superimposed. The worst areas of ice storm damage were downstream of John Redmond Reservoir.

An assessment by Scott L. Satterthwaite, Kansas Department of Health and Environment (KDHE), dated 9 September 2004 (Enclosure 2), shows an estimation (on page 9 of the presentation) of logjam locations in 1991, 2002, and 2004. That illustration, reproduced below, shows the significant accumulation of debris in 2004 as it built upstream (to the left of the illustration) and resulted in closure of the Jacobs Creek Landing (boat ramp). The spectral imagery was a product of analysis conducted by the Kansas Biological Survey and Kansas Applied Remote Sensing Program for the Kansas Department of Health and Environment to identify potential solid waste items contained in the log jam.

The Jacobs Creek Landing access road can be seen approaching the River and logjam from the southwest (on the lower left portion of the illustration). The upper end of the Reservoir is on the lower right of the illustration.



formed in 2004 can be seen. It is assumed that smaller debris is shifting under the pressures of flowing water on the larger logs. If these conditions and parameters were documented or more readily apparent, it might be possible to forecast the risk of upstream migration of the logjam. Unfortunately, those data are not available and developing that information is outside the scope of this report.



Regardless of the limitations discussed above, it is assumed that the location of the current logjam will not significantly be reduced from its current position in the Neosho River. At its current location it will continue to block the Jacobs Creek Landing for the foreseeable future. It is further assumed that any consolidation of the existing materials that might allow the upstream end of the logjam to move downstream of the Jacobs Creek Landing will over time be overshadowed by the future addition of debris. The annual contributions of materials to the logjam are assumed to be sufficient in volume to maintain the size and location of the existing logjam or to extend the logjam upstream.

It is assumed that proposed or potential storage reallocations and increases in conservation pool elevation will not serve to float a significant portion of the logjam free of the Neosho River. Large flood flows and previously high flood control pool elevations have not caused previous logjams to float free of their locations.

It is assumed that a large flood event would serve to compress and float free a relatively small portion of the existing logjam, but that additional woody debris is likely to be transported by such an event and that additional debris would offset any compression of the length of the existing logjam.

No assumption to quantify the upstream migration of the logjam (either terminus or rate of migration) is made for this assessment due to the many variables and general lack of data on which to base such an assumption.

White bass spawning (runs) from the Reservoir to the River has become sporadic over the past several years. The change from annual white bass runs is attributed, in part, to the restriction posed by the logjams, and also, in part, to changing habitat conditions in the Reservoir. Without further study, it is not possible to determine whether the spawning years represent concurrent enabling conditions of: a) reservoir elevation and floodplain overflow caused by the logjam; b) if spawning was accomplished utilizing flow pathways through the logjam; c) both spawning routes were utilized, or (d) spawning downstream of the logjam. It is assumed that the current, much larger logjam will pose a greater hindrance to upstream movement for white bass and other aquatic species and may limit downstream movement of some species. The impacts on annual white bass runs poses a detrimental and long-term environmental impact on the white bass species and therefore on the overall ecosystem in the Reservoir. These impacts would also be measurable in the local and regional economy.

Visitation at the Jacobs Creek Landing access road was last estimated for October 2004 based on area visitation. The table shows vehicle estimates for the previous year. Older access road data could not be located in time for consideration. The vehicle count estimates were not assumed to relate to an average number of passengers or fishing or hunting events. Fishing and hunting access documentation or creel surveys were not located during development of this report.

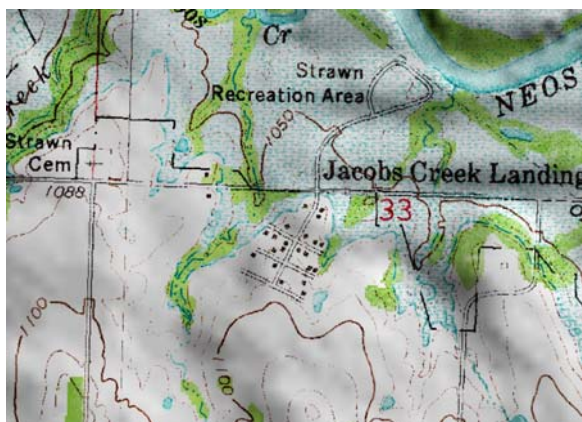
Month	Year	Vehicles
October	2004	241
September	2004	433
August	2004	234
July	2004	697
June	2004	863
May	2004	977
April	2004	1,003
March	2004	322
February	2004	383
January	2004	211
December	2003	332
November	2003	417

Information from residents suggests the following fishing usage at the Landing. In the spring and fall, there appear to be about 15 to 20 people who access the Jacobs Creek Landing for fishing per day. When there are white bass runs, the fishing visits can be from 50 to 75 people per day. White bass runs were once an annual event, drawing fishermen from the surrounding region, including distances as far as Kansas City. At other times of the year fishing access is lower.

No visitation information exists for the Eagle Creek boat ramp.

Residents also indicate that some portion of the vehicle traffic is short-term access to the ramp to check on River conditions for fishing, hunting, or sightseeing.

The Jacobs Creek community, access road, and boat ramp are shown in the illustrations below. The _____ Census identified 57 residents. Some properties are used part time for vacationing.



Potential impacts under these assumed no-action conditions would include:

- More frequent over bank flow within the Refuge on floodplain lands. Overland flow has the potential to alter the riparian habitat vegetation communities, alter wildlife usage, restrict hunting access, and carry sediment and small debris into the Reservoir as

An information paper was presented by David Penny of Master's Dredging Company, Inc., to Coffey County Commissioner Fred Rowley, Jr., and to Jacobs Creek residents. The paper, titled "*Project to Remove the Neosho River Logjam at the Entrance to John Redmond Reservoir*" has been subsequently distributed to State legislators and Congressional interests, who have in turn referred the paper to the Corps for the information it contains. The paper provides valuable information on the history and current condition of the logjam. The paper is attached (Enclosure 3) because of its wide distribution. No company endorsement is implied.

One statement in the paper requires comment. Page 3 contains the following wording: "In the case of the raft above John Redmond Reservoir, the immediate removal of the logjam can prevent the destruction of the present national wildlife refuge and the flooding of the village of Jacobs Creek." The implication of refuge destruction and future flooding of lands other than those lands acquired for operation of the Reservoir as a result of the current logjam or a reasonable forecast of future logjam conditions appears to lack substantiating analysis.

Forecast Future Conditions Without Logjam Removal (the No Action Plan)

All assumptions presented in this report are based on professional judgment having assessed the information described herein.

The forecast conditions assuming "no action" form a baseline from which to compare potential solutions. The potential solutions are the action plans.

Discussions with local interests and government have identified a concern that the current logjam will "grow" upstream toward Hartford and possibly impact river access via the Hartford boat ramp. A concern has also been expressed that the backwater effect of the logjam, even now, may be causing flooding problems as far away as Emporia. The potential for the logjam to extend upstream of its current location is dependent on rainfall, runoff, and stream flow (for which significant amounts of data and predictive models exist) as well as future ice storms and other factors that would produce woody materials for expansions of the logjam (for which relatively little information exists to predict future conditions). Currently, the logjam blocks a portion of the Neosho River channel. In that configuration, there appears to be sufficient floodplain available to convey "normal" and flood flows without causing flooding upstream of Corps lands.

The logjam that occurred in 2004 is the only recorded event of such a magnitude at the Reservoir since it was impounded 40 years ago. The 2004 logjam is roughly four times larger than any previous logjam. Based on the limited data available, there is an opportunity for the logjams to grow in length. However, a lack of data and information about the interrelationship of riparian agricultural practices, riparian forestry, and basin hydrologic and meteorological parameters prevents a definitive conclusion concerning growth of the current logjam. In addition, when considering a future projection of conditions, the issues of "natural" processes of logjam decomposition and (new) channel migration compound the difficulties in forecasting conditions. The lower end of the "plug" that formed in the late 1980's or early 1990's is decomposing and has partially cleared. Also a "compression" of the upper end of the logjam that